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SYNTHETIC CAMPHOR.

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Requests are coming to the Bureau of Chemistry for information on synthetic camphor, and inasmuch as it is difficult to answer in detail the various questions, it is thought desirable to publish a brief resume on the subject.

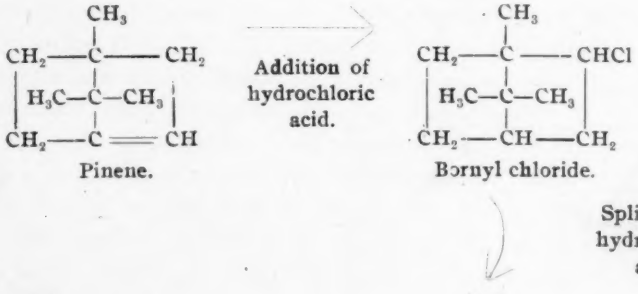
The camphor tree, *Cinnamonum camphora* (L) grows in various sections of the world, either indigenous (Eastern Asia and Japan) or introduced (California and the Gulf States of the United States); but so far the trees have not been utilized to advantage for the production of camphor, excepting on the island of Formosa, where at present nine-tenths of it is produced. All camphor produced on this island is now and has been since the Japan-Chinese war, August 5, 1899, under the supervision and control of the Japanese Government. The unfortunate part of this situation was keenly felt during the late Russian-Japanese War. During the course of this war the amount of camphor placed on the market was materially restricted, probably because the output was diminished. Another reason given is that an undue amount was utilized for the manufacture of ammunition, but this is said to be a mistake. The celluloid industries of this and other countries, depending on camphor as one of the basic constituents in the manufacture of their goods, were remarkably handicapped because of the tremendous advance in the price of camphor during the Russian-Japanese War. About 90 per cent. of all camphor produced is utilized for the manufacture of celluloidal articles. It was also felt to some extent in other directions; for example, camphor is used as an ordinary household remedy for

medicinal purposes and as a cosmetic. During the above-mentioned period the price of camphor was doubled.

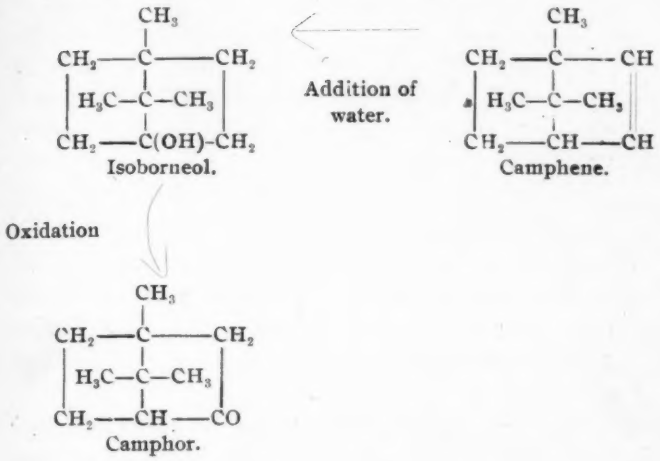
The amount of camphor used for various purposes is estimated at from six to eight million pounds. According to a bulletin recently issued by the Japanese Department of Finance, these figures appear high. The money value of the camphor imported into this country at present approximates one and a half million dollars, and on account of the monopoly and the fear of a possible further restricted supply, unusual efforts have been made to produce camphor synthetically. The outlook for making camphor both synthetically and from natural sources in the near future in the United States is promising. The writer is in possession of samples derived from both sources. It is reported that synthetic camphor is a commercial article in Germany. A former employe of the United States Department of Agriculture is at present investigating the commercial possibility of producing the natural article in this country.

This paper deals largely with U. S. patent literature on the subject of synthetic camphor. The basic substance of most patents for the manufacture of camphor is some variety of turpentine, American or French, or any other product containing a sufficient amount of pinene either dextro or levo-rotatory. All of the operations covered by present patents may be considered under two heads, namely, the conversion of pinene into borneol, isoborneol or camphene, with subsequent oxidation of these products into camphor. These two phases are fully brought out by the following abstracts of the patents themselves.

The accompanying structural formulas represent the successive changes involved in making camphor from turpentine, including the production of camphene as an intermediate step:



Pinene. Bornyl chloride.



The first patent on synthetic camphor known to the author was issued in Germany, April 12, 1892, to J. Bertram, No. 67,255. It consists in converting camphene into isoborneol acetate with a sulphuric-acetic acid mixture. The isoborneol acetate so obtained is saponified, the solid isoborneol separated and oxidized by the usual oxidizing agents.

Camphene can be prepared by treating pinene hydrochloride with alcoholic potash, potassium acetate, glacial acetic acid, sodium alcoholate, sodium benzoate, and heating with water under pressure. In 1902 Karl Stephan was granted two U. S. patents, Nos. 707,270 and 707,271 respectively. According to the former patent camphene is prepared by heating any hydrogen haloid of pinene with aliphatic bases such as piperazin, piperidin and diamylamin, and by the latter patent the same pinene compounds are treated under pressure and heat with alcoholic ammonia, aqueous ammonia or ammonia gas.

The first process protected by U. S. letters-patent No. 582,221 for the manufacture of synthetic camphor was issued May 11, 1897. The turpentine is converted into what is termed by the patentee "hydrochlorinated terpene," long known as "artificial camphor," the common name for which is bornyl chloride. It was first produced by Kindt in 1803 and considered by him to be camphor. It is claimed by the patentee that in order to successfully produce bornyl chloride, it is absolutely necessary to work with anhydrous

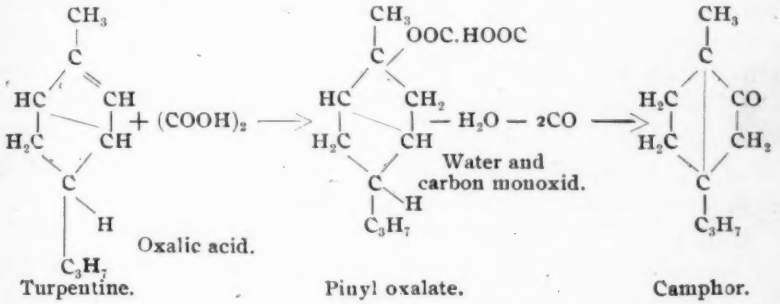
turpentine and hydrochloric acid, the yield being markedly diminished by the presence of moisture. Anhydrous turpentine is produced by treating the article of commerce with finely granulated dry calcium chloride and with subsequent decantation. Hydrochloric acid is prepared by the action of sulphuric acid on dry sea salt, the associated impurities removed by cooling and subsequently passing the gas through calcium chloride. When the turpentine is thoroughly saturated with the hydrochloric acid gas, the bornyl chloride will crystallize out and can be separated from the liquor either by centrifugalizing or by means of a filter pump. The crystals so obtained should be recrystallized from benzin or washed with alcohol.

The patentee found that bornyl chloride can be converted into camphor by the following simple operation: The purified crystals are mixed with lime in the proportion of about three parts of the former with one part of the latter, by weight, and submitted to distillation. This procedure results in the formation of camphene, which, when heated with nitric acid at a moderate heat, is converted into camphor. Other oxidizing agents, such as potassium permanganate, chromic acid or ozone, can also be used.

The apparatus used in the manufacture of camphor by this process is elaborately illustrated and described. The process for purifying the crude camphor is dismissed by saying: "This product will be found usually somewhat dirty and may be cleaned in any suitable manner."

Nearly five years later, April 29, 1902, U. S. patent No. 698,761, on a process of producing camphor, was granted to N. Thurlow. The method consists in treating anhydrous turpentine with anhydrous oxalic acid at a suitable temperature with subsequent oxidation and purification. The oxalic acid supplies the carboxyl group, thus forming an ethereal compound. The method is carried out by mixing five parts by weight of anhydrous turpentine with one part by weight of anhydrous oxalic acid and heating to about 120-130 degrees centigrade. This results in the formation of "penyl oxylate, formate, camphor, and waste polymerization products." The mixture is then treated with lime in excess to break up the ethereal salts of borneol into borneol. The camphor and borneol are separated from the mass by submitting to steam distillation. The distillate contains not only the borneol and cam-

phor, but also some oily matter which can be separated from the borneol and camphor by freezing and centrifugalizing. The mixture of camphor and borneol having now been obtained in a fairly pure condition is submitted to oxidation for the purpose of converting the borneol into camphor. Various oxidizing agents are described as being satisfactory, particularly potassium dichromate with sulphuric acid. The series of reactions supposed to take place are illustrated by the following structural formulas:



During the heating, part of the oxalic acid is decomposed into formic acid, by means of which the carboxyl group may also be introduced into the turpentine.

The Ampere Electric Chemical Company, of Ampere, N. J., claims to have effected a yield of 38 per cent. camphor based on the turpentine. So far, however, synthetic camphor produced by this process has not had a material influence in the camphor market and the commercial value of the patent is highly questioned, especially in view of the fact that the German patent for the process has recently been cancelled. The writer has in his possession a sample of camphor purported to have been made by this process in 1902. Synthetic camphor is usually reported as being inactive optically, but the above sample is dextro-rotatory, 3.64° at 25 C. It is significant to note that no camphor made by this process appears to be available at present. The method is probably of interest at present only historically.

Another process for making camphor was protected by U. S. letters-patent No. 770,940, September 27, 1904. It is claimed (*Ber. d. Chem. Ges.* 33, 3430) that when isoborneol is oxidized by means of permanganate in glacial acetic acid, almost theoretical

results are obtained. The inventor of the present process, however, states that not more than a yield of 10 per cent. can be secured by the operation, but claims that from 95 to 100 per cent. can be secured when isoborneol, either in powdered form or when dissolved in such solvents as benzin or benzol, is oxidized with an aqueous solution of potassium permanganate. The oxidization takes place in an alkaline medium, but not in an acid or neutral one; for example, 10 kilos of isoborneol, either finely powdered or dissolved in 10 kilos of benzol, are well stirred with a solution of 10 kilos of potassium permanganate in 1 cubic meter of water at the ordinary temperature until the color of the permanganate has vanished. The mixture is distilled with steam, and the resulting product crystallized from petroleum ether, whereby the camphor is obtained in a pure state. It is claimed that by this process a very superior camphor is produced because by-products are "wholly avoided."

U. S. patent No. 790,601, issued May 23, 1905, embodies a process by means of which camphor is produced by the direct oxidation of isoborneol esters in place of isoborneol itself, by such agents as chromic acid, nitric acid, permanganate, sulphuric acid, manganese, Caro's acid, etc., working either in solution or in suspension. Various esters may be employed, such as the acetate, benzoate, formate, etc., but the one generally preferred is borneol acetate, on account of its greater accessibility. Glacial acetic acid may be employed as a solvent of the ester. The oxidation may also be accomplished in water.

It is stated in U. S. patent No. 801,483, issued October 10, 1905, on a process for manufacturing of camphor, that it is well known that borneol and isoborneol can be transformed into camphor by the usual oxidizing agents, such as chromic acid, permanganate and the like, but they possess the drawback of contaminating the camphor with by-products which materially hinder the subsequent purification of the camphor. This difficulty is overcome in this patent by the use of ozone. It was at first believed that the use of this oxidizing agent would be impossible or impracticable because of the possibility of forming "additive products which, by reason of their tendency to explode, would have rendered the process technically impossible." Experience, however, has shown that this apprehension was entirely without foundation. It should also be stated that ozone does not produce camphor, as do other oxidizing agents,

when acting on camphene, but camphenilon and formaldehyde. The method is applied in the following manner:

"Ten kilos of borneol are dissolved in 75 kilos of 95 per cent. acetic acid and ozone at the ordinary temperature, passed through until the greatest part escapes practically unchanged. The main portion of the acetic acid is then distilled off; the residuum is diluted with water, neutralized with soda, and the deposited camphor purified by known means."

Petroleum ether can also be used as a solvent in which oxidation may be effected.

U. S. patent No. 801,485 covers a process for converting borneol or isoborneol into camphor by means of oxygen or air. The method consists in vaporizing borneol or isoborneol and subjecting the vapor to the action of oxygen either with or without the presence of so-called "catalytic" reagents; for example, isoborneol is heated to about 170° C. and volatilized by a current of oxygen or air. The mixture vapors are slowly passed over copper wire or through glass tubes filled with fragments of earthenware heated to a temperature of from 175° to 180° C. The cooled product contains from 6 to 25 per cent. of camphor, depending upon the length of oxidation and the dilution of the oxygen. "Other ketones or aldehydes are not produced."

According to U. S. patent No. 802,792, issued October 24, 1905, the methods commonly recommended for the production of camphor are not satisfactory. The author of this patent found that chlorine converts isoborneol rapidly and easily into camphor either in a gaseous state or in solution, using such solvents as water, carbon tetrachloride, benzene, or chloroform. When chlorine gas is passed over finely powdered isoborneol, the following reaction takes place:

$$\underset{\text{Isoborneol}}{C_{10}H_{18}O} + 2Cl = \underset{\text{Camphor}}{C_{10}H_{16}O} + 2HCl$$

The oxidation develops much heat, which is controlled both by external cooling and by mixing the chlorine gas with some inert gas such as air or carbon dioxide. The temperature must be kept at or near 30° C. An aqueous solution of the chlorine works very satisfactorily. As long as any unconverted isoborneol is left the chlorine does not act on the camphor.

Another patent issued October 24, 1905, No. 802,793, covers a

process for the manufacture of camphor by the action of the so-called "gaseous nitrous acid" on borneol or isoborneol, either solid or in solution. The reaction is best brought about by dissolving these several compounds in such solvents as chloroform, ether or ligroine and passing the gas through the solution until reaction is complete. For example: "In an enameled vessel, which is furnished with a stirring arrangement and a cooling apparatus, 10 kilograms of isoborneol are subjected to the action of well-dried nitrous gases which are passed in by a tube. The escaping fumes are compelled to pass through a reflux condenser. As soon as all the borneol is liquefied the vessel is cooled from outside with water, and the introduction of gas is continued until the liquid has attained a bluish green coloration. The mixture is now allowed to stand, care being taken to prevent the temperature rising above 60° to 70° centigrade. During this time nitrous fumes are evolved. After about our or five hours the contents of the vessel are poured slowly into 100 liters of water, whereupon the camphor at once separates in the pure state."

"My process leads to a quantitative yield of camphor pure and free from by-products."

A process for manufacturing borneol from pinene hydrochlorid was protected by U. S. patent No. 826,165, August 17, 1906, based on the well-known Grignard reaction. It consists in warming a mixture, with stirring, of ethylbromid, dry ether and magnesium until a reaction ensues. Just before the reaction is completed, a suitable quantity of pinene hydrochlorid dissolved in dry ether is gradually added to the stirring mixture. When the reaction terminates, the vessel is cooled with water and oxygen, or atmospheric air is passed through the mixture, until oxygen is no longer absorbed. Ice is then added, and the mixture rendered acid by dilute acids which cause a separation into two layers. The upper ethereal layer contains the borneol. The lower aqueous layer is withdrawn, the ether distilled from the borneol, which can be purified by crystallization from such solvents as petroleum ether, benzene or alcohol.

THE NATIONAL FORMULARY AS A LEGAL STANDARD, AND SOME OF ITS DEFECTS.[1]

By George M. Beringer, Camden, N. J.

The druggists of the United States are confronted by a paradox. "The National Formulary of Unofficial Preparations" has been declared by the Federal Food and Drugs Act of June 30, 1906, to be "official," and some of the State legislatures have already followed this example in State acts. Thus a number of preparations that, because of lack of merit or insufficient trial, were denied admission in our Pharmacopœia, and a number of others that for various reasons were dismissed therefrom as no longer worthy of official standing, are all declared by law to be "official" and of the same value as legal standards as the pharmacopœial "drugs." (The word "drug" is used here in accordance with the new legal definition of the word.) The term "official" as used and limited by pharmacopœial authority is by legal enactment perverted to cover the "unofficial." The opinions of experts, physicians and pharmacists alike, and of men who have devoted their lifework to the study of pharmaceutical problems, are thus ruthlessly cast aside by legislators who have never seen either a Pharmacopœia or National Formulary, and "the tests laid down in the National Formulary" (which work is noteworthy for the absence of tests) are declared of equal legal authority and standing as the voluminous and exact tests of the Pharmacopœia.

The writer does not want to be misunderstood in thus calling attention to the anomalous condition existing. The enactment of pure food and drug laws is "righteous legislation," meriting the support and encouragement of every patriotic and honest citizen. On the other hand, such laws should be as just to the manufacturer as to the consumer; equitable alike to producer, dealer and consumer. Further, they should be free from misstatements and errors so as to afford a permanent relief and escape adverse legal decisions.

The movement inaugurated by the American Pharmaceutical Association, looking toward the establishing of uniformity of medicines dispensed on physicians' prescriptions for which there was no authoritative standard, which culminated in the National Formulary,

[1] Read at the Annual Meeting of the New Jersey Pharmaceutical Association, Asbury Park, June 13, 1907.

was a correct and wise movement, and it is to be regretted that the scope of that work was not restricted to this particular field and kept within well-defined limits.

Not the least defect in this book is the desire of the authors to extend the work beyond reasonable bounds. The same spirit and ideas that led to the inclusion in this edition of formulas for battery fluids, antiseptics, corn cure, camphor ice, bay rum and talcum powder, if allowed to go on unchecked in subsequent editions, may include formulas for hair dyes, hair tonics, beverages, skin foods, and the hundreds of toilet articles and domestic aids that are being sold by the druggists.

The desire to offer Formulary substitutes for all proprietary medicines prescribed by physicians, has been carried to the extreme, and in some instances led to still greater confusion and diverted the prescriber still further from the true ethical position of prescribing such combinations of simple and official remedies as are best suited to each patient.

If, on the contrary, the original intent to limit this work as portrayed in the preface to the first edition in the following language: "Without referring to the more ephemeral preparations, or to such as are of a proprietary character, or are used by the public for self-medication, there is a large number of others, which are more or less frequently prescribed by physicians or demanded by the public, but which are not recognized by the Pharmacopœia, either because they were not deemed by the revisers to be of sufficient importance to be included in the official work, or because they originated subsequently to the appearance of that work, or for other reasons," had been carefully and systematically carried out, a far greater degree of uniformity would ere this have been established. Our legislators, now placing the stamp of legal standard upon the volume, should have found a work of accepted authority, and the drug trade should not have been found in a state of unpreparedness and thrown into confusion by these acts of legislation. The volume itself bears ample internal evidence that the committee compiling it did not anticipate such early and broad legislation.

It becomes, however, our duty to frankly criticise the errors and defects existing in the book, especially if these are of such a character as to render it unsafe or dangerous as a legal standard. The scope of this paper will not permit the discussion of all of the errors ex-

isting, and the writer will have to limit this criticism to types of errors with a few specific illustrations.

In the Pure Food and Drugs Act passed by the New Jersey Assembly (Laws Session of 1907, Chapter 217), in the operatic language of the day, the druggists of the State have been handed a lemon. This act deems as adulterated a drug sold under or by a name recognized in the United States Pharmacopœia or National Formulary, if it differs from the standard of strength, quality or purity as determined by the test laid down in the United States Pharmacopœia or National Formulary official at the time of the investigation. It makes it an offence to distribute or sell, or manufacture for distribution or have in possession with intent to distribute and sell such article or drug, under a penalty of $50 for the first offence, $100 for the second, and $200 for the third and each subsequent offence.

With such a stringent and unnecessarily harsh law confronting us, is it not imperative that the pharmacists insist that our legal standards be correct, and that, at the earliest date possible, the National Formulary be revised by a competent committee with the view to its legal standing and instructed to change its scope and formulas so as to make them a satisfactory authority?

The authors of the National Formulary have already published a list of corrections of errors and three reconstructed formulas, but this by no means covers all of the existing errors or of the formulas that are in need of reconstruction.

On critically examining the volume, one is impressed with the clumsy and unscientific way in which quantities are frequently given, especially in the alternative quantities stated in the apothecaries' system. The word "troy" ounce is incorrectly used for the "apothecaries'" ounce throughout the entire volume, and the occurrence of such statements as 2⅔ troy ounces, 5⅓ troy ounces, 1⅝ fluidounces is common. It certainly would have been more in keeping with pharmacopœial example and correct pharmaceutical custom to have stated these fractions in drachms, grains, fluidrachms, and minims.

While the preliminary notices explain that "the alternative quantities are proportional, but not identical, and therefore not interchangeable with the metric quantities given," it is but fair to assume that in any single formula two equivalents of the fluidounce should

not be given if the quantities are proportional. As an example of this type of error, the formula for glycerite of guaiac is cited, where on one line 1 fluidounce of solution of potassium hydroxide is equivalent to 32.5 c.c., and on the next line 1 fluidounce of glycerin is equivalent to 30 c.c.

The nomenclature and titles adopted should have been in harmony with those of the Pharmacopœia. As an example, "phenol" should have been used, not "carbolic acid," and the several titles in which this occurs likewise need correction. The titles and synonyms should also be in accordance with a uniform style or rule and in accord with modern ideas of chemistry. This would have eliminated such synonyms as "syrup of the hypophosphites of *lime* and *soda*." Some of the Latin titles adopted are unfortunate, as, for example, "elixir chloroformi compositum" for a preparation that is not an "elixir" within the meaning of any modern pharmaceutical definition of that term. Another title that appears as a misnomer is "syrupus hydrochlorophosphatum," with "compound syrup of phosphates with quinine and strychnine" as the English translation of that title. As the hydrogen chloride present in the formula given per litre is only that in combination with 4.4 grammes quinine hydrochloride, the presence of "hydrochlorophosphates" is hard to conceive, and certainly does not warrant such title. The quinine salt may be replaced by the equivalent amount of the alkaloid, and the Latin title corrected to correspond with the English translation and the synonym given dropped.

Another obsolete and incorrect title is "Syrupus Actaeæ Compositus," which should be changed to Syrupus Cimicifugæ Compositus. When it is recognized that the genus cimicifuga was delineated by Linnæus in 1774, and that the American cimicifuga or "black cohosh" was so named and described by Nuttall in 1818, it must be apparent why the name actae given to another distinct genus should not enter into this or other correct title for a preparation made from Cimicifuga racemosa (L) Nutt.

The method of citing botanical sources and authorities by the final addition in brackets of the common or English name of the plant grates harshly on the minds of those who are accustomed to see and use botanical binomials correctly. This is particularly noticeable in the section devoted to fluid extracts. As an example, "From the bark of the root of Cornus Florida Linné (dogwood)"

would be more correctly stated : " From the bark of the root of dogwood, Cornus florida Linné." On page 143, we are informed in a note that " Mullein flowers are obtained from Verbascum Thapsus, Meyer." The German Pharmacopœia, from which the formula is taken, states that mullein flowers are obtained from two distinct species, Verbascum phlomoides and Verbascum thapsiforme, but does not give as a source the common Mullein, Verbascum Thapsus, Linné.

The title " Fluidextractum Convallariæ " should have florum added to distinguish this from the pharmacopœial " Fluidextractum Convallariæ " made from the rhizome and roots.

The introductory notes to the section on pills contain several items of interest to the manufacturers whose products must comply with these legal standards or else be deemed as adulterated or misbranded, and likewise to the retailer who sells the manufacturer's products or who proposes to prepare small quantities of pills extemporaneously. A " pill " must " weigh not less than 0.06 gramme or 1 grain," so that we must cease labeling the most active forms of such medication pills if under that weight. The directions for " sugar-coating " may answer for the pharmacist who is compelled to extemporize a method for coating a few pills for a prescription. The product of the " official " directions would be misbranded if labeled " sugar-coated " as the coating is acacia and sugar of milk. It is safe to venture the assertion that no manufacturer uses this method for sugar-coating on a commercial scale. Yet this is the *only legal standard* for sugar-coated pills. For silver-coating a one-pound ointment jar is directed irrespective of the quantity. Surely such directions should be omitted from this book and relegated to the various unofficial works on practical pharmacy, where errors cannot become a source of annoyance and danger to honest dispensers.

We regret to note in this edition the introduction of a new " hobby," namely, the use of saccharin in certain formulas. Syrup of quinidine contains 32 c.c. of solution of saccharin and about 900 c.c. of syrup of orange flowers in each 1000 c.c. ; glycerinated elixir of gentian contains 30 c.c. of solution of saccharin, 400 c.c. of glycerin and 200 grammes of sugar in 1000 c.c.; elixir terpin hydrate contains 1 c.c. solution saccharin, 400 c.c. glycerin and nearly 200 c.c. syrup in 1000 c.c., and the compound cathartic elixir contains 4.5 grammes of saccharin in addition to nearly 700 c.c. aromatic

elixir in 1000 c.c. As official saccharin is considered as at least 500 times the sweetening power of sugar, we have in this latter formula the equivalent of 3,250 grammes of sugar plus the sugar present in the aromatic elixir. Can it be argued that saccharin is needed in any of the formulas cited? If not, then its use is an abuse that should be discontinued.

The compound cathartic elixir of this edition is so radically different from that of the former edition that it can never be substituted therefor. The two formulas placed in parallel columns will strikingly illustrate this, and suggest that if the formula of the second edition was so unsatisfactory as to necessitate an entirely new formula, its use could not have been extensive and the preparation should have been dismissed.

ELIXIR CATHARTIC COMPOSITUM, N. F.

SECOND EDITION.

Fluid extract of senna	125 c.c.
Fluid extract of podophyllum	62 c.c.
Fluid extract of leptandra	50 c.c.
Fluid extract of jalap	50 c.c.
Potassium and sodium tartrate	125 gm.
Sodium bicarbonate	16 gm.
Compound elixir of taraxacum	250 c.c.
Elixir of glycyrrhiza, a sufficient quantity to make	1000 c.c.

THIRD EDITION.

Fluid extract of frangula	125 c.c.
Fluid extract of senna	100 c.c.
Fluid extract of rhubarb	62 c.c.
Spirit of peppermint	14 c.c.
Solution of potassium hydroxide	4.5 c.c.
Saccharin	4.5 gm.
Aromatic elixir (U. S. P.), a sufficient quantity to make	1000 c.c.

It certainly was not the intent to have the Formulary conflict with the Pharmacopœia, and so the formula for balsamum traumaticum could have been omitted, as in the note we are advised that "The official tinctura benzoini composita is a simplified preparation intended to replace the above compound." Again, in the note under soluble tincture of tolu, we are told: "A mixture of 32 c.c. of this preparation with 468 c.c. of syrup yields a product which may be used as syrup of tolu in all cases where the official preparation is not required." Syrup of tolu is a pharmacopœial title and preparation, and such substitution would undoubtedly be technically construed an adulteration. The note to solution of ferrous iodide

advises: "On mixing 1 volume with 11 volumes of syrup (U. S. P.), the product will be practically identical with syrup ferrous iodide U. S. P." To make this statement correct, the diluted hypophosphorous acid directed in the formula would have to be increased from 25 c.c. to 285·7 c.c. These notes, used so freely throughout the work, contain numerous errors and should be critically examined and in many cases eliminated.

In my judgment the most serious defect in the National Formulary is the uncalled-for liberties taken with the formulas of the French Codex and the British and German Pharmacopœias, and the misstatements regarding these pharmacopœias introduced in the notes. It must be admitted that the introduction or use of these foreign pharmacopœial formulas in this country came from abroad, either from prescriptions obtained abroad or from physicians educated abroad, or copied from foreign literature, and that in all such cases the preparations of the foreign pharmacopœias are intended, and the intent should be invariably complied with by the pharmacist.

In some localities the demand for a number of these foreign preparations has become quite extensive, and it has always been the practice for pharmacists having such demand to keep on hand the specified preparations made in accordance with the foreign authorities.

The desire to establish international standards for medicines is certainly a laudable one, and it cannot be considered as wise or as encouraging to such a purpose to unnecessarily modify or alter satisfactory formulas of any such authority. Yet, in this work, this appears to be quite as frequently the rule as the exception. We will consider a few of the formulas that illustrate this defect.

In the note added to Linimentum Saponato-Camphoratum we are told that "Solid opodeldoc is directed by the G. P. to be prepared with soap made from animal fats; but pure white castile soap may be used, provided it has been previously deprived of water." Yet the formula directs "white castile soap" and not previously deprived of water. The German Pharmacopœia directs "medicinal soap," official in that pharmacopœia under the title "Sapo Medicatus," and directed to be made from equal parts of "lard" and "olive oil" saponified with sodium hydroxide. The proportion of the constituents in the German formula for opodeldoc is not the same as given in the Formulary.

The note to stronger solution of ammonium citrate tells us "liquor ammonii citratis (B.P.) may be prepared from this solution by mixing 1 volume of it with 4 volumes of water." As the liquor ammonii citratis (B. P.) contains 125 grammes of citric acid in 1000 c.c., a preparation five times as strong should contain 625 grammes citric acid in 1000 c.c., and not 560 grammes as directed.

The solutions of the organic salts of iron originated in Germany very largely from the excellent work of Dietrich, and good formulas for a number of these popular remedies were long ago published in "Dietrich's Manual." The liquor ferri albuminati is official in the German Pharmacopœia, and as a flavoring, cinnamon water and aromatic tincture are there directed. These are more efficient flavors for the iron salts and less prone to change than the aromatic elixir substituted by the National Formulary.

Mistura oleo-balsamica, our old German friend Hoffmann's balsam of life, has the German Pharmacopœia title as a synonym, but the formula is changed from that of the G.P. by the introduction of oil of orange flowers and the substitution of oil of cloves for eugenol, and the proportions of balsam of peru and oil of cinnamon are also changed.

In the formula for "infused oils," a substitution of equal parts of lard oil and cotton-seed oil for olive oil cannot be too strongly condemned, as it is a well-known fact that such mixtures of oils rapidly undergo change and become rancid. As if to make the substitution more positive, the note attached advises: "The above process is to be used for the preparation of oleum hyoscyami of the G.P. and similar infused oils." An equally reprehensible and totally unwarranted substitution is the use of the French Codex title, balsamum tranquillans as a synonym for compound oil of hyoscyamus (N.F.), and the note states: "The baume tranquille (balsamum tranquillans) of the Codex is a more complex preparation, not identical with the above, but possessing about the same properties." I cannot conceive that this was an intentional sophism.

Pulvis Gummosus (G.P.) is given as a synonym for Pulvis Acaciae Compositus (N.F.), but the ingredients are present in different proportion.

Under the title Pulvis Cretæ Aromaticus, a formula is given containing 6 parts of saffron, and the note to this formula states: "This preparation is equivalent to the Pulvis Cretæ Aromaticus of the B.P." This authority adds the following note: "If a product of

bright color be desired, the saffron may previously be moistened and triturated with a little water or alcohol, or the fresh and faintly damp mixture may be subjected to considerable pressure in the triturating process." I am unable to find such a note in the British Pharmacopœia, and the formula there given *does not* contain any saffron, and the proportion of the other ingredients varies somewhat from that given in the Formulary.

The note added to Syrupus Papaveris states: "The product is practically identical with the Syrupus Papaveris of the B.P." I am unable to find this as an official preparation in the British Pharmacopœia. The only syrup of poppies in the British Pharmacopœia is the Syrupus Rhœdos made from the red poppy petals, an entirely different drug.

ABSTRACTS OF THESES ON CHEMICAL SUBJECTS.[1]

By J. W. Ehman.

Magnesii Carbonas.—By C. M. McClure. An investigation of the relation between impurities in magnesium carbonate and the difficulty in filtering and keeping stock solution of magnesium citrate. The following table gives, in part, the results of chemical analysis of six samples of magnesium carbonate:

	U.S.P. Requirements.	I	II	III	IV	V	VI
Per cent. MgO by residue on ignition	40	42·66	41·45	43·10	42·28	43·00	42·66
Per cent. MgO by direct titration, without ignition		42·32	41·12	42·89	41·21	40·79	40·00
Per cent. MgO in residue from ignition	96	95·93	96·41	95·22	94·48	93·43	92·75
Per cent. Si as SiO_2		·063	none	·023	·136	·236	·183
Per cent. Al and Fe calculated as Al_2O_3		·0076	none	·0163	·0096	·023	·129
Per cent. Ca as CaO		·105	·116	none	·430	·158	·209

Experiments were made with each sample by dissolving 15 grammes in a solution of 33 grammes citric acid in 120 c.c. of water, filtering and allowing to stand:

IV showed no precipitate.

II showed a very slight precipitate in ten days.

I and III showed a slight precipitate in seven days.

VI showed a distinct precipitate in seven days.

V showed a distinct precipitate in four days.

In ten days the precipitates in I, III, V and VI had increased in amount.

[1] The experimental work embodied in these theses was performed in the chemical laboratory of the Philadelphia College of Pharmacy.

These precipitates were filtered off and tested; all contained silica except II and none contained calcium. Another solution was made of V and was allowed to stand without previous filtration. In seven days considerable precipitate had formed, which responded to tests for silica, but not for calcium.

The author concludes that silica causes the difficulty in filtration in proportion to the amount present, all those solutions which were difficult to filter giving a subsequent precipitate of silica. This subsequent precipitation is due to silica, which also promotes precipitation of magnesium citrate.

II made a permanent solution because it contained no silica.

IV made a permanent solution because the silica present was all filtered out owing to its insoluble condition.

Syrupus Acidi Hydriodici.—By P. S. Lane. Eight samples assayed by the U.S.P. method gave percentages of HI ranging from ·44 to 1·18, average ·91.

Three gave decided tests and five slight tests for H_3PO_2. None contained free iodine, although one had a reddish-brown color. One contained considerable glycerin.

Acidity, determined by titrating with sodium hydrate V.S. and calculating to HI, gave higher results (due to presence of tartaric acid, acid potassium tartrate and hypophosphorous acid) in every case except one; in this case the higher result by the U.S.P. assay was due to the presence of potassium iodide.

Difficulty was experienced in determining the end reaction on account of the reducing action of H_3PO_2 upon $AgNO_3$, causing blackening of the solution. The reduced silver may be removed by filtration, but in any case high results are obtained owing to reduction of a portion of the $AgNO_3$.

Assay of Benzaldehyde.—By E. S. Wright. Difficulty was experienced in determining the exact end reaction and in obtaining concordant results in the assay of benzaldehyde. Three assays of the same sample by the official process resulted in 79·423, 78·023 and 77·382 per cent.

Rosolic acid was tried as indicator, but proved unsatisfactory.

The official assay was modified to the extent of heating the benzaldehyde, kerosene and sodium sulphite together in a glass-stoppered bottle to 60° C., cooling and then titrating. Results on seven assays of the same sample ranged from 80·33 to 86·916 per cent., average 83·96.

An attempt to adapt the official assay for formaldehyde to the assay of benzaldehyde failed.

Treatment with an excess of sodium bisulphite and titration of the excess of bisulphite with iodine V.S. also failed, owing to the difficulty in determining the end reaction.

Tinctura Iodi.—By A. E. Pflaum. A number of samples of tincture of iodine obtained from different pharmacists were assayed. All those containing potassium iodide, made by the new official process, were of the required strength. Two samples containing no potassium iodide were deficient in iodine.

Acidum Hydrochloricum Dilutum.—By S. H. Feldman. Ten samples of diluted hydrochloric acid obtained from different pharmacists were assayed, the results ranging from 9·5 to 12·3 per cent. HCl, average 11·05 per cent.

THE PENNSYLVANIA STATE PHARMACEUTICAL ASSOCIATION MEETING.

By Charles H. La Wall.

(*Concluded from page 341.*)

ABSTRACTS OF PAPERS.

Cataplasm of Kaolin.

I. V. S. Stanislaus.

A difference in commercial kaolin is reported, especially as regards the amount of moisture which was found to be present, running as high as 14·2 per cent. in one of the samples, and affording an explanation as to why different quantities of glycerin are required by different samples of kaolin in order to make a product which shall at all times be uniform. The difference in the appearance of the samples when examined microscopically, and as regards fineness of texture was also noted, and a variation in this respect will produce corresponding variations in the finished product. The following deductions were made by the author :

(1) Kaolin should be of the variety known in commerce as bolted china clay. (2) It should be heated for at least one hour with constant stirring before the boric acid is added. (3) The glycerin should be heated to a temperature of 100° C. before adding to the mixed powders. (4) After the addition of the glycerin the heating and

stirring should be continued for at least one hour. (5) The product should be stirred thoroughly until cool. (6) After the volatile flavoring substances are added, the product should at once be packed into air-tight containers.

The Manufacture of Perfumery by the Pharmacist.

I. V. S. Stanislaus.

A review of various commercial methods of obtaining floral odors with reference to the synthetic perfumes constitutes the introductory part of this paper. The difficulty of securing good high-grade fusel oil from alcohol was noted. Even with cologne spirits few of the commercial samples answered the requirements of the perfume maker. Ordinary alcohol, treated with two ounces of animal charcoal per gallon for one week, and then filtered through talcum, gives very satisfactory results. A formula for a stock solvent called "perfumers' spirit" is given.

To each gallon of the above filtrate add—

Spirit of nitrous ether	30 minims.
Cumarin	20 grammes.
Vanillin	10 grammes.
Oil of nutmeg	30 minims.
Tincture of benzoin, Siam	1 ounce.

After which follow a number of formulas for the various floral and popular odors, all of which are possible to be made by the retail pharmacist at a cost of between six and eight dollars a gallon, with the exception of extract of violet, which will cost about twelve dollars and a half per gallon.

Liquor Potassii Arsenitis.

E. F. Cook, P.D.

A great variation having been observed in the appearance of samples of this preparation as made by a class of several hundred students, all working under similar conditions, and supposedly following similar directions, led to an investigation of the possible cause. Some preparations were observed where almost entire precipitation of the coloring matter had taken place, while others were perfectly normal in appearance. When the preparation was made according to the U. S. P. formula by strictly following the official directions, a normal preparation was obtained which possessed the

characteristic well-known light reddish-brown color, transparent in certain lights and slightly opalescent in others.

The coloring matter of the preparation is due to the resinous principle santalin, which colors the compound tincture of lavender used in the preparation, and when the compound tincture of lavender is added to the hot solution of potassium arsenite before diluting to the official quantity, a marked precipitation of the coloring matter in the form of a reddish flocculent deposit was noted. This precipitation was not obtained in the finished preparation as properly made, even after some minutes' boiling, and it is probable that the variation in color results from adding the compound tincture of lavender at too early a stage in the process.

Note on the Action of Some Antiseptics on Some Starch-Converting Enzymes.

Henry Leffmann.

It is well known that the starch-digesting enzymes are restrained by salicylic acid and similar substances. The author believed that the restraining action was dependent in part upon the ratio between the amount of enzyme and the restraining agent. Some experiments were performed which proved to be very interesting. It was found that small proportions of the antiseptic acted as a stimulant, and larger proportions as a depressant. The antiseptics experimented with were salicylic acid, alcohol and oil of cassia, the latter being tried because it has been used for keeping starch solutions in the laboratory. The experiments are too few to form a basis for generalization, but are suggestive for further investigation.

Chemistry in the Store Window.

F. P. Stroup.

Some suggestions are offered for interesting and novel window displays, which, by reason of their being somewhat out of the ordinary, ought to attract attention to the fact that the pharmacist is more than a mere purveyor of merchandise.

Silver Tree.—Dissolve two ten-cent pieces in 2 fluidrachms of concentrated nitric acid, evaporating nearly to dryness to drive off excess of acid, cool, and dissolve the resulting crystalline salts in sufficient distilled water to make a saturated solution. This solu-

tion will be slightly blue on account of the copper which is alloyed with coin silver. Place the solution in a glass vessel with a curved bottom. Add a drop of mercury the size of a large pea and set aside for twenty-four hours or place in the window. An arborescent growth of mercury and silver amalgam will be produced which may be kept indefinitely.

Lead Tree.—Place in a tall jar or wide-mouthed bottle a solution made by dissolving 4 ounces of lead acetate in one quart of water. Place the vessel where it will not be subject to vibration, and suspend in it a strip or cylinder of zinc; battery zinc answers the purpose very well. An abundant growth of crystalline spangles of metallic lead will collect on the zinc within forty-eight hours.

Tin Tree.—Dilute commercial tin chloride solution with forty times its bulk of water and suspend a strip or pencil of zinc in it as in the case of the lead tree. The growth will be very similar to that of the lead tree.

The most striking growths that can be obtained from purely inorganic substances are those which are formed in solution of sodium silicate in the following manner. In the bottom of a wide-mouthed bottle or glass jar, distribute about an inch of clean sand. Place on top of it small crystals (from about the size of a pea to that of a hazel nut) of alum, copper sulphate, ferrous sulphate, manganous sulphate, chrome alum, ammonio-ferric alum, magnesium sulphate, calcium chloride, lead acetate and nickel and ammonium sulphate. It is not necessary to have all of these. Any one of them will do, but a mixture of several gives more striking results. Having distributed the crystals upon the sand, introduce carefully enough solution of sodium silicate, made by diluting the commercial solution with an equal bulk of water, to cover the crystals with liquid to a depth of three or four inches. The plant-like growths will begin immediately, and within twenty-four hours will assume fantastic and interesting forms.

Standardization of Diphtheria Antitoxin.

W. A. Pearson.

A review of the subject of diphtheria antitoxin and the method of standardization of the antitoxin is written in a very clear and interesting manner. Attention is called to the necessity of keeping the supply of antitoxin under proper conditions in the store so that its efficiency may not be impaired.

Laboratory Notes.

Willard Graham.

Analytical data which have accumulated since the last similar contribution was presented at the twenty-ninth annual meeting, were presented upon the following subjects: Acid stearic, acetphenetidin, balsam Peru, barium sulphide, coca leaves, gelatin, iron and potassium tartrate, lard oil, lupulin, oil of anise seed, oil of cloves, soluble ferric phosphate, soluble ferric pyrophosphate, storax, tapioca flour.

A Modification of the U. S. P. Tests for Gurjun Balsam in Copaiba.

C. E. Vanderkleed and H. W. Lynch.

A review of the various modifications of the Gurjun balsam test constitutes the major portion of the paper, the authors contributing a contact method, using the reagents as in the official test, stating that a pronounced reaction is given with as little as 5 per cent. of Gurjun balsam in copaiba, and eliminating the necessity for a control test. The test was applied as follows: Three or four drops of the balsam are dissolved in 3 c.c. of glacial acetic acid. One drop of freshly prepared 10 per cent. solution of sodium nitrite is added, and the mixture very carefully poured upon the surface of 2 c.c. of concentrated sulphuric acid in a test tube. If Gurjun balsam be present a violet color will appear at the point of contact and spread throughout the upper layer.

Solution of Acid Phosphates, N. F.

C. E. Vanderkleed and Harry Bernegau.

Attention is called to the fact that a large amount of hydrofluoric acid is sometimes found in commercial solutions of acid phosphates on the market; but the most serious objection, according to the authors, is, that when made according to the directions of the N. F., the solution contains 7 per cent. of free sulphuric acid and very little free phosphoric acid, even with the use of bone ash of the highest obtainable quality.

The Dispensing Physician and Practicing Pharmacist.

Thomas H. Potts.

The tendency on the part of some practitioners in both the medical and pharmaceutical professions to encroach on each other's

work is deplored by the author, who places the blame therefor on purely mercenary grounds, and who favors legislative enactments for correcting the evil.

Some Everyday Problems.

Dr. C. B. Lowe.

Some practical points are taken up in an interesting way under the following subheads:

The Care of the Store, with reference to cleaning tiling, oiling floors and minimizing the dissemination of dust.

The Soda-Water Fountain.—If the labor is added to the cost of making ice cream by the pharmacist himself, it does not pay. Several of the proprietary ingredients, to increase the quality of ice cream, were tried with poor results. Decorating the fountain by growing plants and cut flowers is a very attractive way of beautifying the store.

Store Lighting.—Gas is cheaper than electricity, but in summer contributes more heat than the latter and adds to the discomfort. The Nernst electric lights are more satisfactory for the store proper, the ordinary incandescent lights being better adapted for the prescription department, etc.

The Prescription Counter.—The prescription counter is often made subsidiary when it should be of first importance in the allotment of store space. A Bunsen burner arranged horizontally provides a good way for melting sealing-wax. A number of observations are also made on keeping distilled water, dispensing capsules, cleaning ointment slabs, etc.

The Laboratory.—This should be a separate department wherever possible. A convenient filtering rack is described, and a note on keeping and dispensing lime water is also given.

Commercial Problems.—Advertising the pharmacy by means of the mimeograph, sending out periodical bulletins to regular customers is very highly commended. Some notes on methods of recording cash and credit sales are also appended.

The paper closes with a consideration of the methods possible in stimulating the interest of physicians in the U. S. Pharmacopœia.

Uranalysis as an Advertisement.

E. E. Heffner.

To be able to give a thorough chemical analysis of urine when required is a very effective way to impress your professional ability on the physicians in your neighborhood. The cost of apparatus and reagents is but slight and the tests are easily understood and applied. A particular application in reference to patients who come for the purpose of buying some proprietary kidney cure is made, showing how the good will of the physician may be acquired under circumstances which make it very difficult. A specimen report, such as is given where an examination is made, is included, and the author advises that this work be done without cost to the physician, with the view of being more than repaid in the confidence and good will which is engendered.

Query 21.

W. G. Greenawalt.

The author does not believe that the pharmacist should be as accommodating as the public expect him to be at the present time, and draws comparisons between different professions and businesses in illustration of his point. He would have the Government provide slot machines where post cards and stamps could be dispensed, and have some means devised by which city directories could be kept on every street corner by the municipal authorities. Then the pharmacist could devote himself more to scientific work, as he should.

Query 39.

W. G. Greenawalt.

The discussion of various side lines in pharmacy constitutes the introduction of the paper, and the increasing popularity of post cards is looked upon with favor as a legitimate means of increasing the druggist's profits. He speaks of the different styles and varieties of post cards, advising against the pharmacist handling any but first-class cards, free from the vulgarity which is sometimes exhibited in cards sold in other kinds of stores.

Query 39.

Jacob Eppstein.

The author speaks of the cosmopolitan interest which is developed by handling cards representing scenes in various parts of the world,

as they usually do, and favors the growing trade in them as not only giving the druggist a chance to increase his profits, but providing another inducement for the public to visit his store.

THE PROPRIETARIES FROM THE PHARMACIST'S STANDPOINT.

Christopher Koch, Jr.

An account of the difficulties with which the pharmacist has to contend in dispensing a preparation for which he has had no previous demand is given in detail, and the blame is laid primarily upon the physician for the growing tendency to prescribe preparations for which there is really no clinical record which entitles them to consideration. The work of the Council of Pharmacy and Chemistry is taken up and discussed in detail, and in conclusion the author advises the pharmacist to stick strictly to the U.S.P. and N.F., and impressing his neighborhood physician with that fact.

QUERY 21.

J. Leyden White.

In small towns the pharmacist does not labor under the disadvantages outlined in this query. There are no city directories and stamps are usually purchased at the post office. The query, therefore, vitally concerns only those druggists in cities of 20,000 or more inhabitants, and the advantages of maintaining this condition, where the pharmacist places himself in a position of favoring the public, are affirmatively discussed. In conclusion, he states that so long as it is good business for the department store to give free concerts, theatrical performances, art exhibitions and expensive souvenirs, it must necessarily follow that it will be good business for the wide-awake man who runs a retail drug store to have well-stocked windows, a clean and bright store, furnish crackers with his soda-water, and sell stamps.

QUERY 31.

W. O. Frailey.

This query as to the value of a hobby to the pharmacist is answered in the affirmative by the author, who believes that a properly selected interest, apart from his business and professional duties, will serve to broaden, educate and edify the pharmacist. Caution is given with reference to the tendency that

some persons have to overdo this matter, and devote so much of their energy to the hobby that they have none left to devote to business. Every pharmacist who rides a hobby should at regular intervals make a searching examination of himself and his actions, with the determination to be a better pharmacist and a stronger character and make himself satisfied with life.

How to Write a Paper.

J. W. England.

In presenting a paper upon this subject before an association which has the distinction of having the largest number of papers presented at a State Association meeting, is like carrying coals to Newcastle. The author takes up the subject in a comprehensive way and in detail, summarizing as follows:

(1) The selection of the subject. (2) Its analysis into subheads and a consideration of the possibilities in the subject. (3) The putting of the various parts together so as to make a homogeneous article. (4) The actual writing of the paper, and finally its publication in some properly selected medium.

Particular attention is called to the necessity for works of reference in the pharmacist's library in order to enable him to avoid doing work which has previously been done by others. The necessity for accuracy of statement is also emphasized, the style being made subordinate, although individuality is always desirable and should be cultivated.

Query 10.

W. O. Frailey.

The primary requisite in interesting physicians in the Pharmacopœia is for the pharmacist himself to become so familiar with the book that he can approach the physician with a confidence and enthusiasm which will insure success. A detailed account of just how to approach the physician is described, and advice is given to not only call upon the physician in his own office, but to have him call at the store for samples of the preparations, if possible, so as to bring him into still closer touch than is ordinarily the case.

Query 10.

L. E. Hastings.

The U. S. Pharmacopœia is a dust-covered book on the physician's shelf, as a rule, being brought to his attention infrequently,

and only prominently at the time of revision. The pharmacist is to blame for this condition, in that he does not assume the initiative in pursuing the proper method to interest the physician, and in some cases, on account of the inferior preparations, due to non-adherence to the U.S.P. directions.

QUERY 10.

E. E. Heffner.

Interest the physician first. This would be accomplished by having a comparative list of the proprietary articles most generally prescribed, together with the ethical U.S.P. preparations of a similar nature, giving the approximate cost of each. The presentation of a copy of the U.S.P. to the physician at the holiday season instead of expensive gifts of cigars, etc., as are usually given, is also advised.

QUERY 10.

O. W. Osterlund.

The present condition of affairs, which has been caused by the work of the Council on Pharmacy and Chemistry, in arousing the interest of the medical profession with regard to objectionable proprietary preparations, should be taken advantage of by the individual pharmacist in making up a number of ethical preparations and bringing them to the attention of his neighboring physician by submitting samples and literature.

QUERY 10.

R. H. Lackey.

The best method of influencing the physician in prescribing U.S.P. and N.F. preparations comprises the use of all those various methods which have been proven by experience in the hands of the proprietary manufacturer in exploiting or marketing his goods. Concerted effort of neighboring pharmacists in sampling and circularizing a line of standard preparations is the most satisfactory method of accomplishing the desired results.

QUERY 10.

F. E. Niece.

The use of the U.S.P. as an advertising medium is overlooked by the average pharmacist. In consequence of the fact that the

physician is overwhelmed with all kinds of literature, let that sent out by the pharmacist be only of the highest class. Judicious sampling of carefully made preparations is of paramount importance. Short articles on such abstract subjects as percolation, specific gravity, etc., and their bearing on properly made preparations, will be found to interest the physician and give him a better opinion of the professional ability of the pharmacist. Specializing on one line at a time, such as pills, ointments, solutions, etc., is found to be the most satisfactory way of accomplishing results that count.

SHOULD THE DEGREE OF DOCTOR IN PHARMACY BE CONFERRED BY ALL COLLEGES?

James Gleghorn, Ph.G.

Pharmacy is greatly in need of some uniform system of instruction and one standard degree. Courses of instruction should be the same in all recognized schools, and something must be done to make pharmacy as attractive as the other professions. Law, medicine, chemistry and theology confer the doctor's degree. Pharmacy should not carry with it a less appropriate title. No other degree is as appropriate, because it establishes the professional character and standing of the person having it; and if pharmacy expects to remain a profession, the doctor's degree will have to be adopted as a standard.

WHAT SHOULD AN APPLICANT FOR REGISTRATION AS QUALIFIED ASSISTANT PHARMACIST IN THE STATE OF PENNSYLVANIA BE REQUIRED TO KNOW?

L. L. Walton.

Under the present pharmacy law, applicants for registered qualified assistants' licenses are expected to have acquired sufficient knowledge and experience in the apothecary business, while serving two years' apprenticeship in the drug store, to enable them to pass such an examination as shall be given them by the State Pharmaceutical Examining Board, and receive registration. It would seem, therefore, that the examiners should, under the law, prepare questions specially adapted to these applicants because of their limited experience. Such an examination should comprehend the following subjects: A good knowledge of official names and synonyms; familiarity with the properties and characteristics of drugs and medicines,

so as to describe them and to recognize unlabeled specimens; knowledge of solubilities and an acquaintance with dangerous incompatibilities; maximum doses of poisons; knowledge of poison laws; proper antidotes for poisonous substances; percentage content of potent remedies; the active constituents of various crude drugs; how to care for, handle and dispense substances that are volatile, inflammable and easily decomposed; a thorough knowledge of the various systems of weights and measures; how to read and correctly interpret signs, symbols and abbreviations; how to compute doses and calculate and prepare percentage solutions.

Examinations should be prepared upon this basis, and should be well adapted to proving if the candidate has mastered the practical facts necessary to the trust imposed by the certificate given, and if a safe person to be licensed to practice as a qualified assistant pharmacist.

A Hand-me-down Conscience.

B. E. Pritchard.

Attention is called to the radical and complete change which suddenly manifested itself on January 1, 1907, in the consciences of men engaged in purveying drugs at first hand. The same drugs which previous to that time were claimed to be absolutely pure, chemically pure, and U.S.P., after that date were found to be correctly labeled with the percentage of such contaminating substances as were required to be stated under the law. The blame for the former condition is not laid upon the producer alone, the primary cause being that the jobber, goaded continually by his customers' cry for lower prices, was forced to pass the demand up to the source of supply, and those responsible for production were in turn compelled to adulterate and sophisticate in order to meet competition. Now that lying as a factor in trade-getting exacts a severe penalty, it is no longer popular. Moral: do not shop for cheapness.

Ash Determinations of Asafetida and Other Common Drugs.

Albert F. Judd.

A number of analyses of asafetida, aloes, capsicum and black pepper are tabulated as regards ash. In asafetida, samples were found in which the ash was as high as 76·6 per cent., containing gypsum as an adulterant. In the aloes one sample was found to

have an ash of 26·5; but as there is no standard for this constant, further investigation was postponed. One sample of powdered capsicum was reported in which there was a large quantity of red lead, bringing the percentage of ash up to 18·4. Several samples of powdered black pepper containing from 12 to 19 per cent. of ash, mainly silica, are also reported.

WILLIAM BEATTY THOMPSON.

By Evan Tyson Ellis.

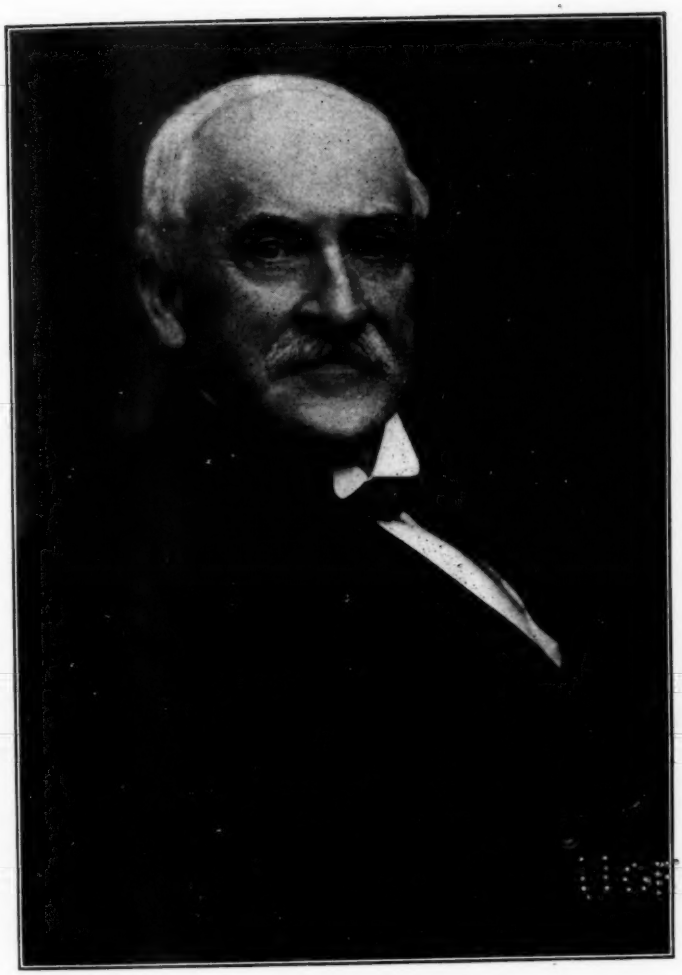
William B. Thompson was born September 11, 1831, and died December 7, 1906. His father was John Thompson, who was well known in this community, having filled the offices of High Sheriff of Philadelphia, and for many years that of Justice of the Peace when the appointment came from the Governor of the State and was virtually a life tenure, and Judge Thompson was especially noted for his integrity.

The son was educated in the private academy of Thomas James, a famed instructor of those days, and in 1848 entered employ as apprentice to Edward and Charles Yarnall, whose place of business was on Market Street, near Second Street, Philadelphia, and had been established in 1819. From a memorandum left by him entitled "A Chapter in Personal History" I quote his own words: "Attended the lectures of the Philadelphia College of Pharmacy during a period of my apprenticeship with the Yarnall firm, 1848–49. I did not present myself for examination and the diploma, at the end of the second term, owing to the fact that much of the work of preparing and putting together goods for shipment, which devolved upon the apprentices of that day, had to be done at night, and regular attendance upon the College courses was much interrupted. The College then was located on what was Zane, now Filbert Street. Consequently I did not present myself for examination at the end of the second session, as there was little opportunity in the wholesale business such as the Yarnalls' of obtaining other than a somewhat superficial knowledge of drugs, only their obvious physical character. Chemicals were few and rare and there were no compounds or compositions made at wholesale. Of course the number of articles handled and their great variety, chiefly as natural, vegetable, mineral,

and organic substances, constituted them objects of interest, a sort of museum to the mind inquisitive.

"When it is considered that the physical weariness of a day of labor of a boy had to be followed by an evening of study, an attendance upon lectures at College, the journey home, the return, and the return again to home, there was not much spirit of energy left. To one in such a position desiring to acquire a knowledge of the manipulatory art, method and practice of operative and dispensing pharmacy, the knowledge was almost a sealed book. There was positively no means or opportunity except self-study without an instructor or a systematic term of service in a retail drug store. The latter was seldom resorted to by those in the wholesale business if they could hope to make a sufficiently satisfactory showing to enable them to pass the required examinations. Some did pass, but I remember to have felt a consciousness of a want of knowledge and a somewhat presumptive assumption in presenting myself to the ordeal. I had, it is true, in some measure qualified myself by a gratuitous service in retail stores where large prescription patronage was dispensed, accepting this means of observation and practice as an equivalent for personal service and application. But when I look back and reflect upon these occurrences, and consider how much more of actual knowledge I should have had, I can only account for my success in securing the college diploma by the fact that I had commenced business for myself." And here we may add that there was even when so young a certain sedateness about Wm. B. Thompson indicative of earnestness and sincerity quite sufficient to have gained the confidence and approval of the then Faculty of the College, for although the result of his examination was not of the highest, his subsequent business career and his reputation as a pharmacist abundantly proved, however, that this implied confidence had not been misplaced.

In 1856 William B. Thompson established himself in business at No. 1700, the S. W. corner of Seventeenth and Mt. Vernon Streets. This was then a newly settled locality, where blocks of first-class dwellings had attracted corresponding residents, and for thirty years he did a remunerative business, very justly enjoying the confidence of that section and of the medical profession; but then an apparently promising opportunity offering to engage in a wholesale drug store and no doubt affording more time to devote to his family, he



WILLIAM BEATTY THOMPSON.
1831–1906.

Not for Sale

disposed of the store at Seventeenth and Mt. Vernon Streets and became interested with our late member, Edward C. Jones, at Fifteenth and Market Streets. This store somehow never proved much of a success to several who engaged in it, and after a limited period William B. Thompson took service with John Wyeth & Brother, where he filled a highly responsible position until his death. And this is what the firm sent to his family: "Mr. Thompson entered the employ of John Wyeth & Brother June 1, 1892, holding a position of responsibility until the day of his death, which occurred December 7, 1906, thus rounding out a period of over fourteen years of faithful and efficient service. He was a most conscientious and earnest worker in the domain of pharmacy, and an invaluable factor in the development of important pharmaceutical operations, was accurate and methodical to a degree, and had a keen appreciation of the precision so essential to insure the highest standard of efficiency.

"Mr. Thompson was much respected and beloved by those with whom he was affiliated, and his passing away was an occasion of profound sorrow on the part of those who were so fortunate as to have been his associates."

William B. Thompson was ready with the pen and contributed to our JOURNAL, as also to the *American Druggist and Pharmaceutical Record*—Professor Bedford being one of his particular friends—to the *Pharmaceutical Era*, also to the *Druggists' Circular* and other drug publications, as well as to the daily press on matters of public interest. He was a member of our college since 1858 and took at one time an active part in its workings. For nineteen years he was a member of the Board of Trustees and for fourteen years the secretary of the college.

William B. Thompson was very impressive, forceful and urbane in his delivery on the different matters that came before the college meetings. The writer will never forget the occasion of Prof. Robert Bridges' retirement in 1880 from age and disability. Mr. Thompson's review of the service of that estimable Professor was masterly and full of pathos, and the college at once granted Professor Bridges a generous annuity for his few remaining years. It was a time when the Faculty were receiving meagre compensation, but the classes were comparatively small.

William B. Thompson's mind was very much impressed with the

dispensing druggists of preceding generations. In our frequent interviews he loved to descant on the merits of these. A paper of some length is left and we take from it the following. It is entitled "Reminiscence and Precept," September 28, 1906.

"When tradespeople of a craft assemble together, or when opportunity is afforded for social and conversational intercourse, the elders appear quite naturally to dwell upon the reminiscence of time and days long since past. Such retrospect seems to yield a charm to memory, and with manifest and warm interest the participants fondly recall the incidents of business and personal life, invested with all its varied experiences and observation. Thus it has sometimes happened with the present remnant or diminishing group of surviving pharmacists of the earlier days of local trade history, especially of our own city of Philadelphia, the natal place of an important era in pharmacy, as also that of medical lore. These recollections are chiefly such as are suggested by that period of time which lapsed with the third and fourth decades, and the closing years of the nineteenth century, and become descriptive in part of the personality of men, and manners of those whose business activities and life pursuit gave impress of profound and lasting character.

"The more is desired, because, whilst the day and time produced a far less number of professional representatives, it also brought into view a class of men whose sterling individuality stood for so much that has been, and properly cherished ever will be, a controlling example—especially to those more numerous, who are industriously following in such worthy tread and character footprint.

"There was much less disposition in the earlier days to measure and gauge character by vocation. However petty and trifling by comparison the transactions of smaller tradesmen appeared to be, there was as much individual character strength to be found dealing in and doling out simples, as existed in the larger branches of business, so that the apothecary, who might be viewed as in the smallest class of traffickers, was no less honored in the public esteem on this account.

"Let these submitted facts be duly considered, however, that the usefulness and value to every community of persons of the knowledge and application of pharmaceutical skill and education to human needs and physical requirement is to-day greater than ever.

The varied attainments in practical, scientific, and technical education, which are required to qualify the apothecary for all the diversified demands which are involved in his professional and moral responsibility, place him in the front rank of all his compeers in scientific pursuit, medicine not even excepted. The pharmacist is the mentor of the physician, and whatever may be the spirit of benevolence and humane purpose involved in the application of medical offices to human suffering, the apothecary precedes his professional ally in providing and properly preparing the very agents which fulfil that benevolent design.

"It is possible only to present types as ideals, at some risk it is feared—unintentional of course—of making ungenerous discrimination by omission of others equally worthy of recognition. Those of us who can recall will remember with what grave decorum and innate commanding dignity such honored predecessors here in Philadelphia as William Biddle, Daniel B. Smith, William Hodgson, Joseph C. Turnpenny, Henry M. Zollickhoffer, Thomas J. Husband, Charles Ellis, and Dillwyn Parrish presided over their respective establishments. What a satisfactory assurance of well-reposed confidence their presence gave to every confiding patron, imparted by gentle, calm demeanor, and undisturbed poise of habit! Each countenance bore an impressive equanimity and even disposition that stamped its placidity. The genial attributes of cultivated disposition never weakened the force of character or the firmness of decision. Each preserved through the walks of a venerated age an undeviating self-control which ever and always underlies exalted character, and finally, should these allusions, perhaps too feebly expressed, prove an inspiration, and serve as impetus to emulate, these lines may not have been written without useful purpose."

William B. Thompson was very much opposed to the practice of some Western colleges turning out pharmacists without the shop experience. In an article which appeared in the *Amer. Druggist and Phar. Record*, November 9, 1893, he says after referring to a resolution passed by the American Pharmaceutical Association in 1871, "That colleges of pharmacy should be controlled by pharmacists," and that "a practical experience" in the store should be a *sine qua non* among the requirements for graduation, "that as reasonably might it be expected that an artisan could acquire a knowledge of his trade by studying models of tools, and simply inspecting the material of which he should construct his work."

We find among his papers the following maxims printed in large type; whether displayed in his store or handed to apprentices we do not know. But these words show the character of the man:

BUSINESS LOGIC.

POOR DRUGS—POOR RESULT.

POOR RESULT—POOR REPUTATION.

POOR REPUTATION—POOR BUSINESS.

Wm. B. Thompson was a member of the American Pharmaceutical Association since 1856. He was associated with the Charity Hospital of Philadelphia as its Secretary and Treasurer for a period of twenty-six years and Treasurer of the old Philadelphia Trade Association of Retail Druggists until it was superseded by the National Association.

In 1860 Mr. Thompson married Elizabeth Chapin, daughter of William Chapin, who was so well known in this community as the Principal of the Pennsylvania Institution for the Instruction of the Blind, which he filled for over a generation. Mr. Thompson's wife, a daughter, and a son, William Chapin Thompson, survive him. On the evening of his end he appeared in usual health after the day's service, enjoying his family group (for his tastes were very domestic), and retiring at the customary hour, soon after passed away almost without a sign—a blessed way for the individual, but a shock to us, the survivors.

CORRESPONDENCE.

CALL FOR MEETING OF THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY.

At the last meeting of our Association at Indianapolis, it was agreed that if possible we should hold a meeting prior to the meeting of the American Pharmaceutical Association, in order that our work might not interfere with the regular sessions of the American Pharmaceutical Association, thus giving our members an opportunity to participate in and enjoy the work of our mother Association.

It is therefore ordered by the Executive Committee that a meeting be called for Saturday, August 31st, at 10 o'clock A.M., at the New Astor Hotel, New York, and we earnestly urge that every

Board of Pharmacy in the United States arrange to have a representative present at this meeting.

Matters of vital importance in connection with Pure Food and Drug Legislation, uniformity of Pharmacy laws, educational requirements and national legislation will be considered.

Delegates from all Boards of Pharmacy will be permitted to take part in the discussions whether they are members of the Association or not. Papers or addresses upon any subject pertaining to the objects of the Association are solicited.

Communications may be addressed to the Chairman of the Executive Committee, or the Secretary.

F. B. LILLIE,
Chairman Executive Committee.

July 15, 1907.

AMERICAN PHARMACEUTICAL ASSOCIATION.

PROCTER MONUMENT.

As the time approaches for the next annual meeting of the American Pharmaceutical Association it seems desirable to record the progress thus far made in the work of the Procter Monument Committee. In order that the Committee may make a full report at the meeting in September, it is highly desirable that the committees of the various State associations send the funds collected to the Treasurer, Benjamin T. Fairchild, Washington and Laight Streets, New York City, and report the names of subscribers, together with the amount of each subscription, also stating whether the subscriptions are paid or unpaid, to the Secretary, Henry Kraemer, 145 North Tenth Street, Philadelphia.

Up to date the secretary has received subscriptions and reports from the following States and countries:

ENGLAND.

A subscription of $25 was received through Henry Kraemer from Professor John Attfield, of Watford, England, which has been handed to the Treasurer, Mr. Fairchild.

KANSAS.

J. P. Redmond, Kansas City, Mo.	$ 5 00
William McPike, " " "	10 00

These subscriptions were received through Professor Sayre, and the amount has been turned over to Mr. Fairchild.

MINNESOTA.

At the solicitation of Professor Wulling, the Minnesota State Pharmaceutical Association voted $100, and this amount was paid to Mr. Fairchild in November last.

NEW YORK.

Mr. William Muir, Chairman of the Committee on Procter Memorial Fund, of the New York State Pharmaceutical Association, furnished the following report:

New York State Pharmaceutical Association	$50 00	Dr. W. C. Anderson	$2 00
C. G. Bruckman	1 00	Jacob Lauffer	1 00
M. C. Condello	1 00	Charles Heimerzheim	1 00
Dr. Fred P. Tuthill	1 00	J. H. Rehfuss	2 00
Oscar Kleine	1 00	William Bussenschutt	1 00
F. E. Kalkbrenner	1 00	Dr. A. E. Hegeman	1 00
Dr. A. D. Linderman	1 00	Charles L. Gessell	1 00
Dr. Peter W. Ray	1 00	L. C. Bossardet	1 00
Adrian Paradis	1 00	E. J. Kennedy	1 00
Nils G. Kant	5 00	Dr. A. P. Lohness	1 00
John G. Wischerth	2 50	George Kleinau	1 00
Gustavus Balser	10 00	Julius Kalish	10 00
Dr. Thomas F. Raymow	1 00	F. B. Hayes	1 00
J. T. Tengelsen	2 00	Dr. Joseph Weinstein	1 00
Thomas J. Keenan	1 00	Daggett & Ramsdell	5 00
Dr. Willis G. Gregory	1 00	James L. Dykes	1 00
Dr. G. C. Diekman	1 00	Thomas Stoddart	10 00
E. R. Squibb	50 00	Judson B. Todd	1 00
Richard Hudnut	2 00	Charles B. Sears	1 00
Warren L. Bradt	1 00	John Hurley	2 00
Byron M. Hyde	1 00	George Reimann	1 00
S. A. Grove	1 00	Dr. H. W. Schimpf	2 00
J. C. Krieger	2 00	O. T. Larkin	1 00
Joseph Kahn	1 00	Fred Menges	2 00
German Apothecaries' Association (New York)	25 00	Henry B. Lentz	1 00
A. E. Dall & Co.	2 00	William H. Rogers	2 00
Carl Mittinzweig	1 00	V. L. Cole	1 00
Dr. W. H. Weygandt	1 00	Clarence O. Bigelow	5 00
Rochester Pharmacal Association	10 00	H. B. Guilford	5 00
Kings County Pharmaceutical Society	25 00	T. B. McKane	2 00
H. Benatar	1 00	Lehn & Fink	10 00
		J. B. Sackett	5 00
		Manhattan Pharmaceutical Society	25 00
		Dr. H. H. Rusby	5 00

Charles L. Gesell	$1 00	Isaiah Lewin	$1 00
George Hahn	5 00	W. T. Cregan	5 00
Oscar Riedstrom	2 00		
Jacob Diner	2 00	Total	$358 50
Dr. A. B. Huested	1 00	Expenses for postage, circulars, stationery, etc.	43 30
Otto Wiche	1 00		
C. L. McBride	5 00	Balance	$315 20
Benj. Rosenberg	5 00		
Oscar Kleine	1 00	This balance has also been handed to Mr. Fairchild through Frank Richardson, Treasurer of the N. Y. State Pharmaceutical Association.	
H. H. Blomerer	1 00		
F. A. Russell	2 00		
George Kleiman	2 00		

PENNSYLVANIA.

Mr. William McIntyre, of Philadelphia, has received the following subscriptions, and has sent the total amount to Mr. Fairchild:

Henry J. Siegfried	$10 00	Miss M. A. Moffet	$1 00
George W. Roland	2 00	W. J. Stoner	1 00
L. L. Walton	5 00	Richard H. Lackey	5 00
Mrs Horace Lee	1 00	Jacob A. Miller	5 00
D. J. Thomas	10 00	Edwin M. Boring	5 00
William McIntyre	10 00		
Franklin M. Apple	5 00	Total	$70 00
Charles T. George	10 00		

Henry Kraemer has received the following paid subscriptions and the balance of $188.63, after deduction of expenses amounting to $42.87, has been handed to the Treasurer, Mr. Fairchild:

Henry Kraemer	$10 00	Harry Matusow	$2 00
Florence Yaple	5 00	Richard M. Shoemaker	15 00
Lorne E. Hastings	2 00	S. E. R. Hassinger	5 00
J. C. Peacock	5 00	Frank X. Moerk	10 00
Ambrose Hunsberger	5 00	F. F. Muller	2 50
William J. Miller	3 00	Frank E. Morgan	10 00
O. W Osterlund	5 00	William O. Frailey	1 00
Adolph W. Miller	15 00	John F. Patton	5 00
James T. Shinn	10 00	John K. Garland	1 00
William M. Morrison	5 00	David Horn	5 00
E. F. W. Garber	3 00	George A. Gorgas	5 00
Charles B. Fricke	3 00	C. A. Weidemann	5 00
C. W. Hancock	10 00	Louis Emanuel	5 00
Samuel P. Sadtler	10 00	J. M. Graves	2 00
J. B. Moore	25 00	William H. Smith & Co.	5 00
Edwin L. Newcomb	5 00	H. E. Peters	5 00
J. H. Stein	5 00	Total	$231 50
Henry P. Thorne	5 00	Expenses for postage, circulars, etc.	42 87
J. Warren Worthington	2 00		
Edward H. Hance	10 00	Balance	$188 63
M. I. Wilbert	5 00		

MISCELLANEOUS.

In addition to the foregoing, Mr. Fairchild has received from Dr. John F. Hancock, $222.50, being payment from the following:

Collected by C. S. N. Hallberg	$187 50	sociation, J. A. Lloyd, Treasurer	$10 00
Tennessee Pharmaceutical As-		Prof. John Uri Lloyd	25 00

PLEDGED SUBSCRIPTIONS.

The following is a list of the pledged subscriptions received by Henry Kraemer:

Joseph P. Remington	$100 00	Smith, Kline & French Co.	$50 00
William R. Warner, Jr.	50 00	Joseph L. Lemberger	10 00
M. N. Kline	25 00	Clement B. Lowe	10 00
Frederic E. Niece	5 00	William E. Lee	5 00
W. L. Cliffe	10 00	Charles E. Vanderkleed	2 00
Henry C. Blair	5 00	L. E. Sayre	2 00
Joseph A. Heintzelman	10 00		
Evan T. Ellis	10 00	Total	$294 00

Through Prof. Joseph P. Remington the late John Wyeth, his brother, Frank, and the firm of John Wyeth & Brother, pledged $2,000 to the fund.

The paid and pledged subscriptions to the Procter Monument Fund which have thus far come to the notice of the secretary amount to $3,230.33.

HENRY KRAEMER, *Secretary.*

BOOK REVIEWS.

SOLUBILITIES OF INORGANIC AND ORGANIC SUBSTANCES. A handbook of the most reliable quantitative solubility determinations. Recalculated and compiled by Atherton Seidell. New York: D. Van Nostrand Co. 1907. $3.00, net.

This work of Dr. Seidell's is one of the most important reference books that has been recently published. It contains data relating to the solubilities of more than a thousand substances. These are given for different temperatures and under varying conditions. In addition to this information, the weight of 1 c.c. of solutions at different temperatures and specific gravities are given. The author gives the references to the original literature, and he has attempted

to unify the work of different investigators and to bring it all down to a working basis.

It is an invaluable work, not only for chemists and analysts, but for physiologists, pharmacists and all who handle chemicals in a practical way.

COMMERCIAL ORGANIC ANALYSIS. By Alfred H. Allen. Third edition, rewritten and revised. Volume II, Part III. Revised by the author and A. R. Tankard. Philadelphia: P. Blakiston's Son & Co. 1907. $5.00, net.

This part of this valuable work is devoted to the consideration of acid derivatives of phenols, aromatic acids, resins, and essential oils. The matter included is in large part new, the following subjects being treated: sulphonated phenols and their allies; benzoic acid and its derivatives; cinnamic acid and its derivatives; salicylic acid and its allies; dihydroxy-benzoic acid and its allies; gallic acid and its allies; phthalic acids; chemical composition of resins; general characters of resins; resins; oleoresins or turpentines; gum-resins; extraction, classification, general characters, analysis, constituents and hydrocarbons of essential oils; caoutchouc and gutta-percha; olefinic terpene alcohols and aldehydes of essential oils; cyclic terpene alcohols of essential oils; phenols and phenolic esters of essential oils; ketones of essential oils; sulphuretted constituents of essential oils; special characters of individual essential oils; terpeneless essential oils and table of all the better-known essential oils.

While this volume represents largely the work of the author, the late Dr. Allen, the unfinished work has been completed by Mr. Tankard, with the assistance in certain parts, of Dr. Leffmann. The work continues to be a most important handbook for the analysis of the substances discussed, and this volume in particular is indispensable to the pharmacist as well as analytical chemist.

FOODS AND THEIR ADULTERATION. Origin, manufacture, and composition of food products; description of common adulterations, food standards, and national food laws and regulations. By Harvey W. Wiley. With eleven colored plates and eighty-six other illustrations. Philadelphia: P. Blakiston's Son & Co. 1907.

Dr. Wiley, who is well known as the Chief of the Bureau of

Chemistry of the United States Department of Agriculture, says in part in the preface: "This manual is descriptive in character and aims to give, within its scope, as thoroughly and intelligibly as possible, an account of the various food-products in common use in their natural and manufactured conditions, with the usual adulterations which have been found therein. It includes information regarding Methods of Preparation and Manufacture, Food Values, Standards of Purity, Regulations for Inspection, Simple Tests for Adulterations, Effects of Storage, and similar matters pertaining to the subject. It has been designed to interest the consumer, as well as the manufacturer, the scientific as well as the general reader, all of whom it is hoped will find in it something useful. The consumer is entitled to know the nature of the product offered, the manufacturer and dealer the best methods of preparation. It will give the physician and sanitarian knowledge of the value of foods, their proper use and inspection, and, while not analytical in purpose, will provide the chemist with information which will guide him in his work of detecting impurities."

Dr. Wiley has rendered a service to consumers, manufacturers and sanitarians alike in bringing together in this volume so much of the information which is more or less scattered that relates to foods and their adulterations. It is not only more or less valuable to the scientist, but the general reader in particular will find the book one which is easily understood and of considerable value. Pharmacists would do well to have a book of this kind in their reference libraries

STUDIES IN PLANT AND ORGANIC CHEMISTRY, AND LITERARY PAPERS. By Helen Abbott Michael (Helen C. De S. Abbott), with biographical sketch. The Riverside Press, Cambridge, Mass., 1907.

As a girl and young woman, Helen C. De Silver Abbott belonged to Philadelphia, but as she advanced intellectually and as her vision broadened, it was but natural, one almost feels inclined to say, that even though she had not married Professor Michael, she should finally take up her residence in Boston, for whatever else we may say of the "Hub," it is acknowledged that it has a mental atmosphere peculiarly its own.

She died in that city the latter part of 1904, and shortly afterward a brief biographical sketch of her, together with a list of her scientific and literary papers, was published in this JOURNAL (Vol. 77,

p. 460, 1905). These papers have been collected into one volume by her brother, Francis R. Abbott, who with singular good taste has left the estimate of his sister's work to others without one word from him.

The accompanying biographical sketch was written by Nathan Haskell Dole, who also, while speaking of "her lovely nature, her admirable character, her astounding ability, and her epoch-making work," makes use of her own materials to construct his narrative. He compares her to Maria Mitchell, and says that she did for chemistry what Professor Mitchell did for astronomy. The materials drawn upon are in part an autobiography entitled "A Brief Outline of Ten Years of Scientific Life," certain "Scientific Notes" and the notes which she made on a "scientific pilgrimage" to Europe in the summer of 1887. On this trip she met a very large number of the most distinguished botanists and chemists in England and on the Continent, including such botanists as Pringsheim, Pfeffer, Schwendener and Kny, and such chemists as Bunsen, Crookes and Kekulé. By the chemists she was welcomed as a chemist, and by the botanists as a botanist; and she records that Professor Pringsheim showed her a list of all the botanists of the world, in which he had included her name.

The "Studies in Plant and Organic Chemistry" are accompanied by an introduction written by Dr. H. W. Wiley, who says: "She was among the very first investigators of this country who began in a systematic way to study the relations of chemical composition to species of plants and to plant growth." The relation of plant constituents to plant form and plant evolution was a central idea with Dr. Michael, and she wrote three papers bearing on this subject. The titles of these papers are as follows: "Certain Chemical Constituents of Plants considered in Relation to their Morphology and Evolution," "The Chemical Basis of Plant Forms," and "Comparative Chemistry of Higher and Lower Plants." Doubtless such a relation exists, but the problem seems a difficult one, particularly in view of the fact that only now are chemists beginning to formulate laws governing the relation between molecular structure and crystal forms.

Upon her literary work we need not comment here other than to say that she contributed to both prose and poetry, and that again we have evidence of the depth and beauty of her nature.

F. Y.

PHILADELPHIA COLLEGE OF PHARMACY.

The quarterly meeting of the members of the Philadelphia College of Pharmacy was held June 24, 1907. The president, Howard B. French, presided. Eleven members were present. The minutes of the semi-annual meeting, held March 25th, were read and approved. The minutes of the Board of Trustees for March 5th, April 2d, and May 7th and 10th were read by the Registrar, J. S. Beetem, and approved.

The report of the delegates to the Pennsylvania Pharmaceutical Association at its recent meeting at Bedford Springs was presented by the chairman, M. N. Kline. A large number of papers was presented—thirty-four—the largest number ever offered at any of the State meetings. This was due to the efficient work of Professor Charles H. LaWall, chairman of the Committee on Papers and Queries. These papers covered a variety of subjects, all of greater or less interest to pharmacists; a large number were devoted to the consideration of the question of what retail druggists could do to induce physicians to prescribe U.S.P. and N.F. preparations, rather than the preparations of pharmaceutical manufacturers. In the report of the Committee on Trade Interests were several recommendations of importance, including one favoring the organization of co-operative buying by the retail druggists.

The next meeting of the Association will be held at Paxinosa Inn, Easton.

Dr. J. A. Miller, secretary, and J. L. Lemberger, treasurer, were re-elected for the thirtieth time. Dr. Lowe supplemented the report by saying that the Association was welcomed to Bedford Springs by the Burgess. The Committee on Adulterations presented a valuable report. They laid stress on the difficulty of securing pure drugs through the importers, as many of them would not meet the requirements of the U.S.P. Belladonna was cited as a notable instance. The social entertainments were, as usual, very good; one given by the hotel management deserving special mention. A more extended report is published in the AMERICAN JOURNAL OF PHARMACY, pages 332 and 367.

The report of the Historical Committee was read by the chairman, George M. Beringer. Quite a large number of the graduates of the College had failed to reply to the queries sent out referring to their personal careers.

The Pennsylvania State Museum at Harrisburg has requested that the College prepare for its Division of Education a permanent historical exhibition illustrating the history and course of study of the institution. The committee therefore recommend that an exhibit of photographs and a volume setting forth the history of the College be prepared for the State Museum, and a duplicate copy for the College.

The recommendation was approved and an appropriation of two hundred dollars was made to cover the expense of the same.

The Committee on Necrology reported that during the year one active and one associate member had died. Brief memorials of these two members, Joseph D. Marshall and J. W. P. Outerbridge, were read. The chairman presented biographical sketches of several honorary members who had died during the year, which were referred to the Committee on Publication for insertion in the AMERICAN JOURNAL OF PHARMACY.

The Committee on Membership reported the number of active, associate, corresponding and honorary members now connected with the College; also the names of several delinquent members who were liable to suspension. After discussion it was ordered that their names be dropped from the roll of membership.

A number of names were proposed for honorary membership, which were ordered to lay over till the next meeting.

The representatives to the Centennial Celebration of the University of Maryland—Baltimore, May 29th to June 2d—Prof. Joseph P. Remington and Prof. Henry Kraemer, presented a report of that very interesting event. The report by Prof. Kraemer is published in the AMERICAN JOURNAL OF PHARMACY for July, page 341.

An amendment to the by-laws—to make the fiscal year of the College, now ending April 30th, to the end of the College term—was presented by the Board of Trustees and referred to the Committee on By-laws.

Mr. George M. Beringer, in alluding to the recent meeting of the New Jersey Pharmaceutical Association, noted the absence of any delegation from the Philadelphia College of Pharmacy or of the Alumni Association, while the colleges of the neighboring States had all sent delegations. He thought the College should be represented, and hoped that the matter would receive consideration by the next year's meeting.

The president made the following appointments:

Delegates to the American Pharmaceutical Association—Prof. Joseph P. Remington, chairman; Prof. Henry Kraemer, Prof. Samuel P. Sadtler, Prof. C. B. Lowe, M. I. Wilbert; and as alternates, Mahlon N. Kline, E. M. Boring, George M. Beringer, William L. Cliffe, Joseph W. England.

Committee on Necrology—Samuel P. Sadtler, Henry Kraemer, Gustavus Pile.

Historical Committee—George M. Beringer, Thomas S. Wiegand, Henry Kraemer, M. I. Wilbert, Jacob M. Baer, with power to add to their number.

ABSTRACTS FROM THE MINUTES OF THE BOARD OF TRUSTEES.

March 5th. Fourteen members in attendance.

Committee on Property reported they were having plans prepared for the new building for the Pure Food and Drugs Laboratory.

Committee on Library reported a number of accessions to the Library, some by purchase and a number by donation.

Committee on Instruction gave information about the proposed new course, also a roster covering the same. A general discussion followed in reference to the new course.

Committee on Commencement reported that the Academy of Music had been engaged for the evening of May 16th.

Committee on Discipline reported that two students had been caught cheating during the examination, and the Dean was instructed to inform them that they would not be permitted to graduate this term, and must attend another year; the scholarship man to pay for his next year's tuition.

April 2d. Thirteen members in attendance. Mahlon N. Kline was elected chairman of the Board; George M. Beringer, vice-chairman, and J. S. Beetem, registrar. The chairman announced the standing committees for the year.

Committee on Library reported a number of accessions to the Library.

Committee on Appropriations reported the estimated amounts to be allowed for the ensuing year to those committees authorized to make expenditures.

Committee on Instruction made a detailed report in reference to the new laboratory course.

Committee on Property reported that plans for the new building would be ready by the May meeting.

Committee on Examinations reported that the first year final examination was in progress and the second year examinations would be held the following week.

The Dean announced the death of John Wyeth, of the Class of 1854. A committee was appointed to prepare a suitable minute.

A communication was read from the Pennsylvania State Museum, asking that the Philadelphia College of Pharmacy be represented in a permanent exhibit.

Joseph W. Ehman was elected to active membership in the College.

May 7th. Twelve members were present.

Committee on Property reported that necessary repairs had been made. Outline plans for the new building were shown to the members.

Committee on Library reported a number of accessions to the Library. Among them was a copy of "Studies in Plant and Organic Chemistry, and Literary Papers," by Helen Abbott Michael, with a biographical sketch, prepared and presented to the College by Francis R. Abbott (see p. 390).

Committee on Theses reported that they had carefully gone over all the theses presented by the Class of 1907. The treasurer presented his report for the year ending April 30, 1907.

May 10th. Adjourned meeting. Twelve members were present. The Committee on Examinations reported the names of those students who had successfully passed the examinations for the degree of Doctor in Pharmacy, Pharmaceutical Chemist, and for Certificates of Proficiency in Chemistry, whereupon they were balloted for and declared elected and entitled to receive the diploma at the coming commencement. The committee further announced the names of the students receiving prizes.

The chairman then announced the names of members of the Board who had been selected to present them.

C. A. WEIDEMANN, M.D.,
Recording Secretary.

THE READJUSTMENT OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

M. I. Wilbert in a letter says: The proposal for a readjustment of the American Pharmaceutical Association, as outlined by Mr. Hynson, in this JOURNAL for June, 1907, has much to commend it, and is certainly deserving of careful study on the part of every member of the Association.

It is perhaps needless to reiterate at this time that, if the American Pharmaceutical Association is to continue to progress, and to appeal to any appreciable number of individuals interested in the various branches of pharmacy, the plan of organization and the method of conducting the business of the Association must be materially changed.

The American Pharmaceutical Association should continue to be, as it has been in the past, the one representative organization of the profession, or, perhaps better, the science of pharmacy in America. At no time in the history of our country has there been such an evident need for such an association as just now, and at no time have the prospects for a stronger or a more representative national organization been more in evidence than at the present time, with all of the various factors that are clearing the way for the practice of pharmacy, divested of its numerous more or less objectionable side lines, to divert interest and attention from the main object of our being pharmacists.

To provide for a truly representative organization, I believe that the general plan of organization that has been adopted by the American Medical Association should be borne in mind. For those not familiar with this plan I would suggest that they send and secure a copy of the Constitution and By-Laws of the American Medical Association.

For present conditions, in pharmacy, a more centralized form of organization than that of the American Medical Association should be adopted, with a view of developing the reversed order at some future time.

I would not be in favor of deleting any portion of the present constitution, and the only changes that appear to me to be necessary would be to provide for the creation of a council, or delegate body, to conduct all of the business of the Association, and a Board

of Trustees, of, say, six members, to conduct the business in the interim.

The scope of membership should be as broad as possible, and might well remain as at present, with the possible proviso that the Association readopt, and the members be asked to subscribe to, the code of ethics promulgated by the founders of the American Pharmaceutical Association.

NOTES AND NEWS.

THE PACIFIC PHARMACIST is a new monthly drug journal, the first number of which appeared in May. It is the official organ of the California Pharmaceutical Society, and purports to be "an independent journal devoted to scientific pharmacy and the interests of the drug trade." Prof. William M. Searby is editor-in-chief, and associated with him on the editorial staff are Professors J. H. Flint, Albert Schneider and H. B. Carey. The new journal starts out well, and we doubt not that with such a corps of efficient workers it will be able to maintain its purpose.

PROPOSED EXHIBIT OF U.S.P. AND N.F. PREPARATIONS.—At the recent meeting of the Pennsylvania Pharmaceutical Association a committee of seven members was appointed to represent the association at the meeting of the Pennsylvania State Medical Society, and to conduct an exhibit of U.S.P. and N.F. preparations similar to that made at the meeting of the American Medical Association at Atlantic City, by the Philadelphia Branch of the A. Ph. A. An appropriation of $100 was made to defray the expenses of making the exhibit.

SIR WILLIAM HENRY PERKIN, F.R.S., the discoverer of aniline mauve, died at his residence, Sudbury, England, on July 14th, in his seventieth year. He received his early education at the City of London School, and at the age of fifteen entered the Royal College of Chemistry. Professor Hoffmann was one of his teachers, and two years later he became assistant in Hoffmann's Research Laboratory.

It was while thus associated, in 1856, that his great discovery was made. He was working at his father's house during the holiday season, attempting to prepare quinine artificially, and in the course of his experiments obtained the product, afterward called mauve, whereby the coal-tar industry was established. Last year the jubilee of Sir William's discovery was celebrated, both in Europe and America, he, accompanied by Lady Perkin, making the trip to this country to be present at the ceremonies held in New York (AM. JOUR. PH., Vol. 78, pp. 300, 450, 577).

DR. FRANK L. JAMES, the accomplished editor of the pharmaceutical and scientific departments of the *National Druggist*, died in St. Louis, on Sunday

evening May 19th, of erysipelas. Dr. James was born August 27, 1841, in Mobile, Alabama. His ancestry was of the New England type on his mother's side, and of English yeomen on the paternal side. He early manifested his exceptional qualities of mind, and we take the following from the *National Druggist* for June: "His facility in the acquirement of languages was little short of marvelous. There is hardly a language that has a literature with which he was not more or less familiar, and most of them he could read and translate with ease."

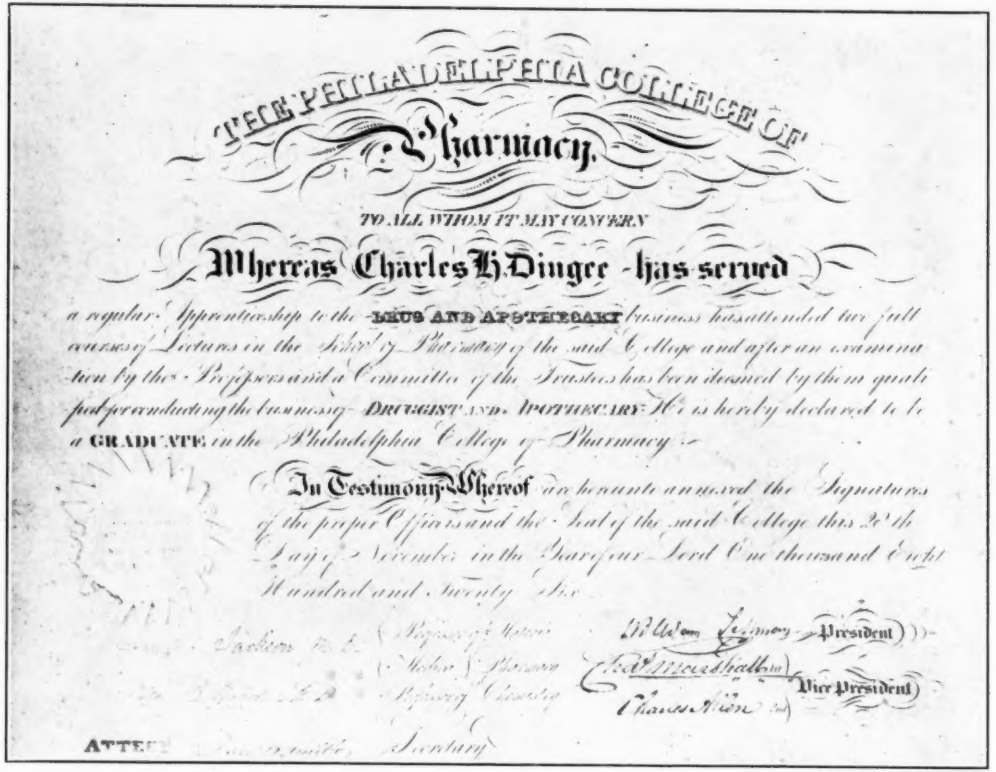
Dr. James received his chemical education in the laboratory of Baron Justus von Liebig, who was his friend as well as teacher. He graduated in medicine in Paris on the eve of the breaking out of the Civil War in the United States, and, coming home, was appointed a member of the Secret Service of the Confederacy by President Davis. Dr. James was at one time president of the American Microscopical Society, and was the author of a book entitled "Elementary Microscopical Technology." He had been connected with the *National Druggist* for eighteen years, and for his place it will be difficult to choose a successor.

DAVID HOOPER, F.L.S., F.I.C., F.C.S., who was Quinologist to the Madras Government for thirteen years, and who is now acting as Curator of the Industrial Section of the Indian Museum, at Calcutta, has this year been chosen Hanbury Medallist.

Mr. Hooper's services as Quinologist, his investigations on the chemical constituents of a large number of Indian drugs, and his share in the preparation of the following works: "Pharmacographia Indica," "Materia Medica of Madras," and "An Introduction to Materia Medica for India," leave no question as to his fitness for the honor which is to be conferred upon him.

JOSEPH HELFMAN, editor of the *Bulletin of Pharmacy* for the past thirteen and a half years, announced his withdrawal from pharmaceutical journalism in the May number of that journal. Perhaps during the whole course of his editorial career, Mr. Helfman has not given expression to a more significant saying than is contained in the following paragraph taken from his concluding editorial: "Mindful of my own great debt to American pharmacy, I would fain express the deep conviction that its future welfare will be assured only in the degree that it fosters a rising sense of responsibility in its followers. Neither among individuals nor among whole classes of men can success abide unless they invite and seek and court responsibility. The true measure of a man is his readiness to bear it. What lasting success can pharmacists expect if they shirk their accountability to the medical profession and to the sick, if they skulk behind laws and associations and manufacturers?"

Mr. Harry B. Mason, formerly associate editor of the *Bulletin*, now becomes the sole editor. Mr. Mason is a student, a forceful speaker and writer, and possessed of an original turn of mind—all which help to fit him for his responsible duties.



THE PHILADELPHIA COLLEGE OF

Pharmacy.

TO ALL WHOM IT MAY CONCERN

Whereas Charles H. Dingee has served a regular Apprenticeship to the DRUG AND APOTHECARY business has attended two full courses of Lectures in the School of Pharmacy of the said College and after an examination by the Professors and a Committee of the Trustees has been deemed by them qualified for conducting the business of DRUGGIST AND APOTHECARY He is hereby declared to be a GRADUATE in the Philadelphia College of Pharmacy

In Testimony Whereof we have hereunto annexed the Signatures of the proper Officers and the Seal of the said College this 20th Day of December in the Year of our Lord One thousand Eight Hundred and Twenty six

Wm Procter Jr. President

Vice President

Thos. Wilson

REPRODUCTION OF THE FIRST DIPLOMA AWARDED BY THE PHILADELPHIA COLLEGE OF PHARMACY.